Centre for Economics and Foreign Policy Studies

edam

EDAM Energy and Climate Change Information Note

Carbon Taxation

June 2016

Gökşin Bavbek
Research Assistant, EDAM

WHAT IS CARBON TAXATION?

Carbon emissions constitute the foremost cause of climate change and contribute to environmental degradation, creating significant negative externalities that can't be addressed within the framework of the free market. The costs of these emissions are not paid by the emitters but inflicted on society as a whole. Therefore, the utilization of public policy mechanisms is necessary in order to internalize these costs and to reduce their negative impacts on the society and environment. The policies designed to reflect truer costs of carbon to the emitters through the use of public policy are collectively referred to as carbon pricing. Applying a form of carbon pricing is necessary in order to bring down the harmful carbon emissions and shift the investments into cleaner options. According to the World Bank, around 11% of the total carbon emissions were subject to a carbon pricing mechanism on the year 2014, and this figure is expected to increase further by the next few years[1].

The two main types of carbon pricing mechanisms are carbon taxation and emission trading systems(ETS). These two methods work in similar ways for the most part but also have some key distinctions. While carbon taxation sets a direct price on emissions by introducing a cost per amount of CO2 emitted, emission trading schemes set a limit on the quantity of emissions with a penalty exacted if the limit is exceeded. The limit is generally enforced by allowing tradable emission permits each emitter must acquire in order to comply by its set limit. Thus, carbon taxation allows the quantity of the emissions to be determined by market forces whereas ETS programs instead allow the price to be determined by the market[2].

Compared with ETS, carbon taxation is considered a more direct way to address the negative externalities caused by fossil fuel combustion. The distinguishing aspect of the tax is that the amount is for the most part determined by the level of carbon content of any given economic activity. Therefore, even though other tax mechanisms may also inflict a cost on fossil fuels, these can't be classified as carbon taxes unless the amount of taxation is determined by carbon content[3]. By putting a price per ton of carbon emitted, carbon taxes create incentives for emitters to shift their production towards less carbon intensive ways thus triggering a general response in the economy in the long run[4].

Historically, the earliest countries to tax carbon emissions have been northern European countries in the early 1990's, Finland being the first on 1990[5]. Since then, many other countries have experimented with carbon taxation policies and a number of countries employed consistent carbon taxation mechanisms over long periods of time. The carbon taxation policy option will most likely draw increased interest from the world as more countries seek to revise their climate change policies, especially after the Paris Agreement comes into effect.

1 World Bank and Ecofys, 'State and Trends of Carbon Pricing'(2015), p. 23

2 Kaufman, Noah, Obeiter, Michael and Krause, Eleanor, 'Putting a Price on Carbon: Reducing Emissions'(2016), World Resources Institute, p. 5

3 Ibid.

4 World Bank, 'Background Note: Putting a Price on Carbon with a Tax', accessed from http://www.worldbank.org/content/dam/Worldbank/document/Climate/background-note_carbon-tax.pdf on 8.6.2016

5 Sumner, Jenny, Bird, Lori and Smith, Hillary, 'Carbon Taxes: A Review of Experience and Policy Design Considerations'(2009), National Renewable Energy Laboratory, p. 1

NEW EXPECTATIONS AFTER THE PARIS AGREEMENT

The climate change narrative entered a new stage after the adoption of the Paris Agreement at the end of 2015. Under the Paris Agreement, nearly all the countries in the world agreed to hold the global temperature increase to well below 2° C, with efforts to further limit the increase to 1,5° C. The main foundation this target rests on are the commitments submitted by individual countries in the form of 'Intended Nationally Determined Contributions'(INDC). The INDC's of the countries outline their climate change mitigation plans and set specific mitigation targets for the period between 2020 and 2030[6].

It is expected that the new global climate commitments agreed upon in the Paris Agreement will substantially transform the policy landscape regarding climate change. Countries will be compelled to adopt new policies in order to meet the targets outlined in their INDC's. Furthermore, the new global climate consensus sends clear signals to the businesses and policymakers alike to adapt to changing circumstances. It is clear that under the new policy landscape, low-carbon growth will gain increased importance and various fossil fuel industries will come under increased pressure. In this context, Turkey will also be among the countries that will need to revisit its climate change and energy policies.

It can be expected that new and revised carbon taxation mechanisms will play an increased role in the new period following the Paris Agreement as part of a broader policy mix. The carbon taxation policy option can also be relevant for Turkey in the country's bid to devise a comprehensive climate change and energy roadmap. If Turkey chooses to employ a carbon tax in the near future, the design of such a mechanism will be crucial and significant insights can be gained from examining the experiences of other countries who have been employing a carbon taxation mechanism.

6 United Nations Framework Convention on Climate Change, accessed from https://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf on 9.6.2016

WHICH COUNTRIES CURRENTLY TAX CARBON?

Implemented or scheduled

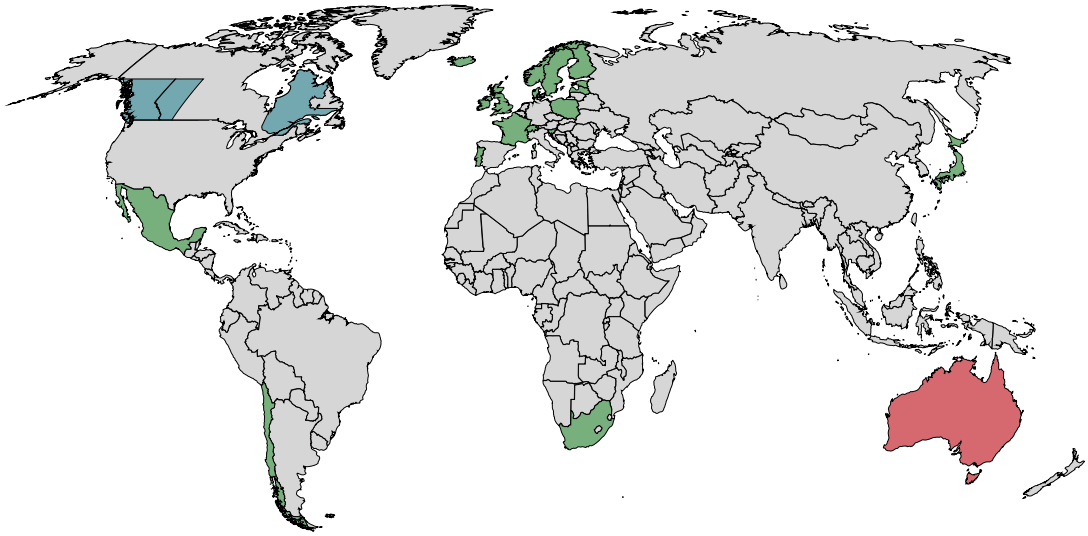
South Africa
Mexico
Japan
France
United Kingdom
Denmark
Finland
Sweeden
Norway
Ireland
Iceland
Switzerland
Chile
Portugal
Estonia
Latvia
Slovenia
Poland

Implemented or scheduled (at sub-national level)

British Columbia, Quebec, Alberta (Canada)

Repealed

Australia



There are currently nearly 20 countries that are currently employing or have scheduled to implement a form of carbon taxation[7]. These countries are comprised of a diverse list that includes both developed and developing nations across different continents. The design of the tax differs greatly among different countries. While some of the tax designs encompass a wide range of sectors, others are limited to specific sectors. The amount of the tax also varies greatly, from 130 USD per ton of CO2 in Sweden to 15 USD per ton of CO2 in France[8]. Additionally, there are also several examples of carbon tax mechanisms employed at the sub-national level. Some provinces in Canada currently constitute the most prominent of such cases and Alberta recently became the last province to adopt such a legislation[9].

Also, in several countries, other tax mechanisms exist that can't be classified as carbon taxes but serve a similar purpose. One such example is the tax that is being applied in India on coal sources based on ton of coal[10]. Costa Rica also has had such a tax in place since 1997, applying a percentage based tax on fossil fuel sources[11].

Additionally, several other countries are currently considering adopting new carbon pricing measures. Among these, countries such as Brazil, China, Korea and Ukraine can be listed[12]. Significant developments can also be expected in the US with the progression of the Clean Power Plan, which will compel the individual US states to devise new policies to reduce their carbon emissions caused by electricity generation by levels dictated by the federal state[13].

7 World Bank and Ecofys, 'State and Trends of Carbon Pricing'(2015), p. 12

8 Ibid.

9 Chester Dawson, The Wall Street Journal, 24.05.2016, 'Canada's Alberta Province Details New Carbon Tax on Fuel Consumption', accessed from http://www.wsj.com/articles/canadas-alberta-province-details-new-carbon-tax-on-fuel-consumption-1464128181 on 16.06.2016

10 Clean Technica, 4.3.2016, 'India Doubles Tax On Coal Again', accessed from http://cleantechnica.com/2016/03/04/india-doubles- tax-coal/ on 6.6.2016

11 World Bank, 'Background Note: Putting a Price on Carbon with a Tax', accessed from http://www.worldbank.org/content/dam/Worldbank/document/Climate/background-note_carbon- tax.pdf on 8.6.2016

12 World Bank and Ecofys, 'State and Trends of Carbon Pricing'(2015), p. 10

13 US Environmental Protection Agency, accessed from https://www.epa.gov/cleanpowerplan/clean-power- plan-existing-power- plants on 8.6.2016

CARBON TAXATION AGAINST ALTERNATIVE POLICIES

Another important issue regarding carbon taxation is the interrelation of the policy mechanism with the other prominent carbon pricing option, ETS. Several countries use ETS and carbon taxation jointly in their policy mix, whereas others have opted to use one or the other separately. Using exclusively carbon taxation, a form of ETS, or a hybrid of the two are different options that need to be considered before designing a carbon pricing policy framework.

Each policy choice can have distinct advantages and disadvantages over the other. A basic comparison of the two policy options can be seen in the table below.

CARBON TAX VS ETS[14 15 16]

Carbon Taxation	Emissions Trading System
Can provide a cost effective way of carbon mitigation	Can provide a cost effective way of carbon mitigation
Can generate revenues	Can generate revenues
Price is set, quantity is determined by the market	Quantity is set, price is determined by the market
Price needs to be administratively changed over time to adjust to evolving conditions	Price automatically adjusts itself to changing conditions
Provides more price predictability for the future, encouraging investments	Future prices less certain, thus can undermine potential investments
Overall effect on emissions less certain	Overall effect on emissions more certain
Easier to administer and enforce	Harder to administer
Can be easily implemented on several sectors	Harder to implement on the transportation and heating-cooling sectors

14 Frank, Charles, 'Pricing Carbon: A Carbon Tax or Cap-And-Trade?'(2014), Brookings Institution, accessed from http://www.brookings.edu/blogs/planetpolicy/posts/2014/08/12-pricing-carbon-frank on 4.6.2016

15 Kaufman, Noah, Obeiter, Michael and Krause, Eleanor, 'Putting a Price on Carbon: Reducing Emissions'(2016), World Resources Institute, pp. 27-28

16 Kennedy, Kevin, Obeiter, Michael and Kaufman, Noah, 'Putting a Price on Carbon: A Handbook for US Policymakers'(2015), World Resources Institute, pp. 10-11

RELEVANCE FOR TURKEY

As a developing country with rapidly rising GHG emissions, Turkey has a significant international responsibility in the struggle against climate change. The current share of the country in the global GHG emissions is relatively small, the country's emissions making up only 0,7% of the total emissions since the industrial revolution[17]. However, the rate of growth of the emissions has been alarmingly high in the last decade. As the processes of rapid industrialization and urbanization in the country are expected to continue in the near future, the policy choices the government makes today are crucial in determining the emissions trajectory of the country for years to come.

Turkey's INDC outlines the basic emissions pathway it plans to follow over the next decade. The document pledges a 21% decrease of emissions from the business-as-usual scenario until 2030. However, the high emissions growth trajectory of the country becomes apparent when the business-as-usual scenario of the country is examined, which anticipates nearly a 150% increase in the emissions between the years 2015 and 2030[18]. Therefore, the current pledge of the country is generally considered as lacking in climate ambition.

Increasing coal based generation capacity has been one of the focal points of the Turkish energy policy in the recent past. Coal-fired electricity capacity of the country has rapidly increased through the last decade, and it is expected to further increase in the coming years with several policies in place aimed at boosting domestic lignite capacity. This situation threatens to undermine the country's efforts in the international struggle against climate change. In addition, the severity of the various environmental problems faced by the country are exacerbated by the increased utilization of coal energy. Because of these reasons, it is necessary to devise a new policy framework and roadmap that will help in aligning the energy and climate goals of the country in the near future.

The current energy policy of the country is not sustainable in the long run. As the global climate change policy landscape continues to evolve, Turkey will likely be faced by additional international pressure to pursue more climate friendly energy policies. Such a shift in policy would also allow the country to benefit more from the low-carbon technology options that are being developed around the world and rapidly increasing their market shares.

17 The Republic of Turkey, Intended Nationally Determined Contribution, accessed from http://www4.unfccc.int/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf on 5.6.2016

18 Ibid.

In this backdrop, carbon taxation stands out as one of the policy tools that can be utilized. A recent study undertaken by the collaboration of WWF-Turkey and Istanbul Policy Center estimated that with the application of a carbon tax equaling 1,2% of the country's total GDP by 2030, the country's total emissions can be reduced by 40% compared to the official plans, provided that the revenues collected by the tax are used to in the establishment of a 'Renewable Energy Investment Fund'[19].

If administered properly, carbon taxation can potentially play an important role in the future of the Turkish energy policy mix. The key to this prospect would be the design of the tax mechanism. The various design options should be considered to devise a carbon taxation model for Turkey that would maximize the benefits and minimize the potential negative effects of the tax. The enduring case of low fossil fuel prices in the recent years also provides an invaluable opportunity for the implementation of such a mechanism. Along with other carbon pricing mechanisms like the ETS model, carbon taxation should definitely be taken into consideration by the policymakers as one of the tools that can help steer the country's economy towards a low-carbon growth pathway.

19 Yeldan, Erinç, Voyvoda, Ebru, Özgür Berke, Mustafa, Şahin, Ümit and Gacal, Funda, 'Low Carbon Development Pathways and Priorities for Turkey, Climate-Friendly Development in Turkey: A Macro Level Evaluation',WWF-Turkey and Istanbul Policy Center, p.54

Centre for Economics and Foreign Policy Studies

edam

EDAM Energy and Climate Change Information Note

June 2016

Carbon Taxation

Gökşin Bavbek
Research Assistant, EDAM